

## EOS Production Sites Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for February 2006 -- comparing the measured performance against the requirements.

### Highlights:

- Stable performance
- Outstanding Issues:
  - GSFC to JPL-AIRS via PIP
  - New requirements are still being worked
    - Old requirements used again this time.
- Significant changes in testing are indicated in Blue, Problems in Red

### Ratings:

#### Rating Categories:

| Rating           | Value | Criteria  |
|------------------|-------|---|
| Excellent:       | 4     | Total Kbps > Requirement * 3                      |
| Good:            | 3     | 1.3 * Requirement <= Total Kbps < Requirement * 3 |
| Adequate:        | 2     | :Requirement < Total Kbps < Requirement * 1.3     |
| Almost Adequate: | 1.5   | Requirement / 1.3 < Total Kbps < Requirement      |
| Low:             | 1     | Requirement / 3 < Total Kbps < Requirement / 1.3  |
| Bad:             | 0     | Total Kbps < Requirement / 3                      |

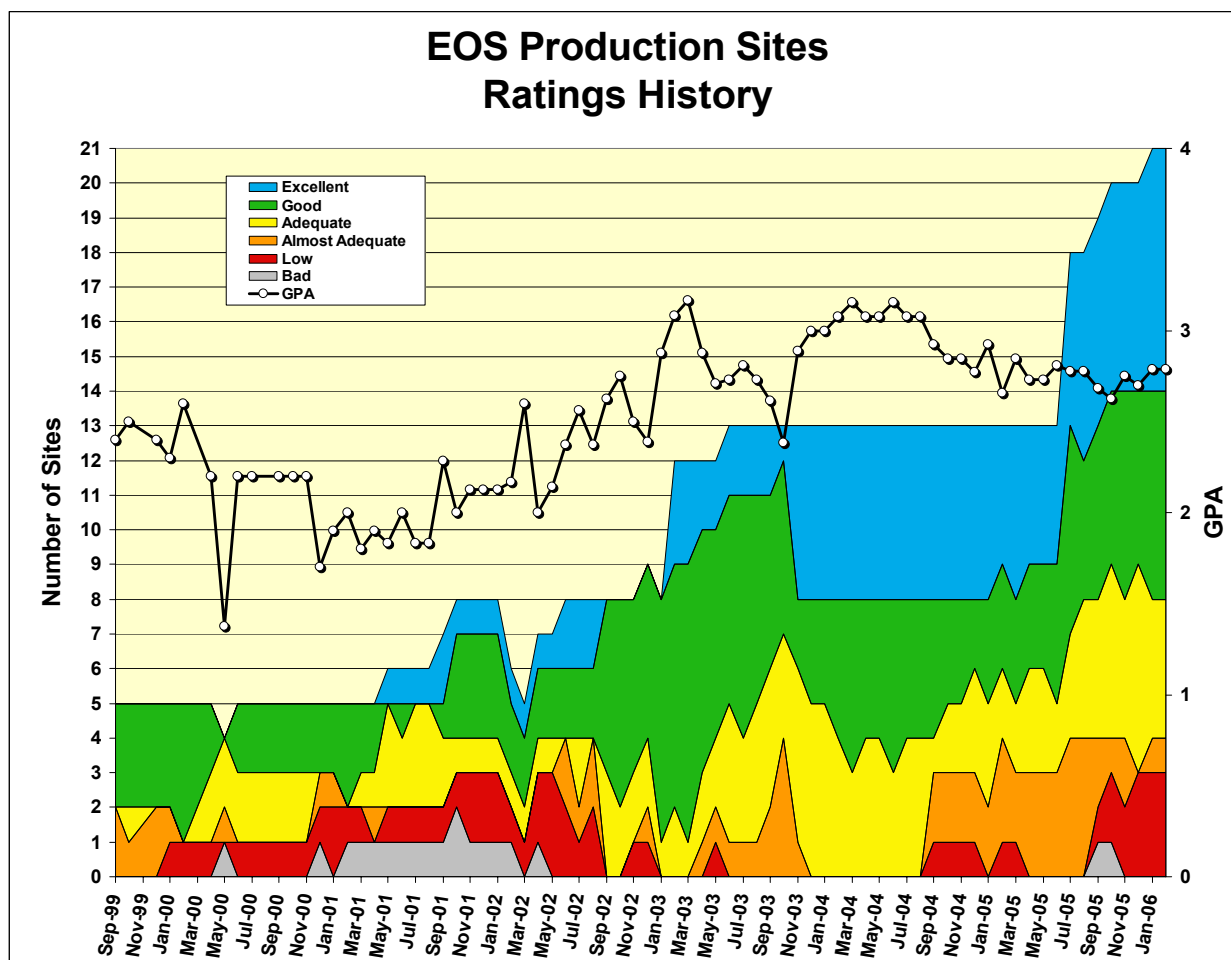
Where Total Kbps = Integrated Kbps (where available)

Else = User Flow + iperf monthly average

### Ratings Changes:

Upgrades: ↑ None

Downgrades: ↓ None

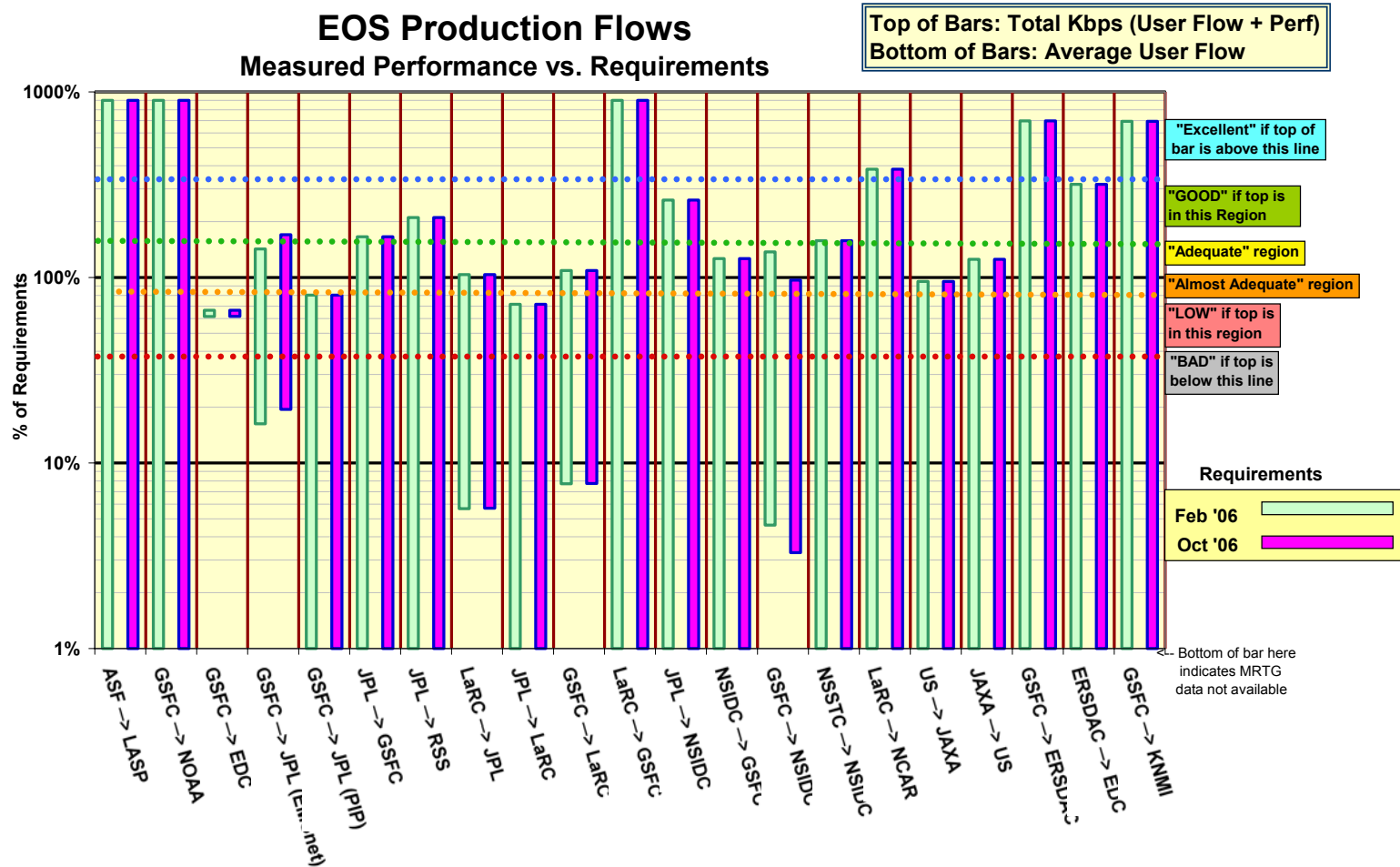


The chart above shows the number of sites in each classification since EMSnet testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

## Network Requirements vs. Measured Performance

| February 2006  |                            | Requirements (kbps)                            |        | Testing                   |                    |                |                |                 | Ratings                        |            |           |
|--|----------------------------|--|--------|---------------------------|--------------------|----------------|----------------|-----------------|--------------------------------|------------|-----------|
| Source → Destination   | Team (s)                   | Current  | Future | Source → Dest Nodes       | Avg User Flow kbps | iperf Avg kbps | Total Avg kbps | Integrated kbps | Rating re Current Requirements |            | Rating re |
|  |                            | Feb-06   | Oct-06 |                           |                    |                |                |                 | Feb-06                         | Last Month | Oct-06    |
| GSFC → ASF   | QuikScat, Radarsat         | n/a  | n/a    | GSFC-CSAFS → ASF          | n/a                | 1333           | 1333           | 1333            | n/a                            | n/a        | n/a       |
| ASF → LASP   | QuikScat                   | 16   | 16     | ASF → LASP [via EMSnet]   | n/a                | 1342           | 1342           |                 | Excellent                      | E          | Excellent |
| GSFC → NOAA  | QuikScat                   | 189  | 0      | GSFC-CSAFS → NESDIS       | n/a                | 6843           | 6843           |                 | Excellent                      | E          | Excellent |
| GSFC → EDC   | MODIS, LandSat             | 285361   | 285361 | GDAAC → EDC DAAC          | 175808             | 172117         | 347925         | 189799          | LOW                            | L          | LOW       |
| GSFC → JPL (EMSnet)  | ASTER, QuikScat, MLS, etc. | 3144   | 2634   | GSFC-CSAFS → JPL-SEAPAC   | 511                | 4258           | 4769           | 4475            | GOOD                           | G          | GOOD      |
| GSFC → JPL (PIP)   | AIRS, ISTs                 | 15757  | 15757  | GDAAC → JPL-AIRS          | n/a                | 12649          | 12649          |                 | LOW                            | L          | LOW       |
| JPL → GSFC   | AMSR-E, MISR, etc.         | 7387   | 7387   | JPL-PODAAC → GDAAC        | n/a                | 12227          | 12227          |                 | GOOD                           | G          | GOOD      |
| JPL → RSS  | AMSR-E                     | 2488   | 2488   | JPL-PODAAC → RSS          | n/a                | 5233           | 5233           |                 | GOOD                           | G          | GOOD      |
| LaRC → JPL   | TES, MISR                  | 39553  | 39553  | LARC-PTH → JPL-PTH        | 2247               | 41028          | 43275          | 41028           | Adequate                       | A          | Adequate  |
| JPL → LaRC   | TES                        | 52626  | 52626  | JPL-PTH → LARC-PTH        | n/a                | 37628          | 37628          |                 | LOW                            | L          | LOW       |
| GSFC → LaRC  | CERES, MISR, MOPITT        | 58594  | 58594  | GDAAC → LDAAC             | 4528               | 62923          | 67451          | 63836           | Adequate                       | A          | Adequate  |
| LaRC → GSFC  | MODIS, TES                 | 3160   | 3160   | LDAAC → GDAAC             | 9                  | 49944          | 49953          | 49944           | Excellent                      | E          | Excellent |
| JPL → NSIDC  | AMSR-E                     | 1342   | 1342   | JPL-PODAAC → NSIDC SIDADS | n/a                | 3504           | 3504           |                 | GOOD                           | G          | GOOD      |
| NSIDC → GSFC   | MODIS, ICESAT, QuikScat    | 13317  | 13317  | NSIDC DAAC → GDAAC        | n/a                | 16792          | 16792          |                 | Adequate                       | A          | Adequate  |
| GSFC → NSIDC   | MODIS, ICESAT, QuikScat    | 63980  | 90813  | GDAAC → NSIDC-DAAC        | 2963               | 87543          | 90506          | 87840           | GOOD                           | G          | AA        |
| NSSTC → NSIDC  | AMSR-E                     | 7497   | 7497   | NSSTC → NSIDC DAAC        | n/a                | 11835          | 11835          |                 | GOOD                           | G          | GOOD      |
| LaRC → NCAR  | HIRDLS                     | 5395   | 5395   | LDAAC → NCAR              | n/a                | 20644          | 20644          |                 | Excellent                      | E          | Excellent |
| US → JAXA  | QuikScat, TRMM, AMSR       | 1431   | 1431   | GSFC-CSAFS → JAXA         | n/a                | 1360           | 1360           |                 | AA                             | AA         | AA        |
| JAXA → US  | AMSR-E                     | 1282   | 1282   | JAXA → JPL-SEAPAC         | n/a                | 1603           | 1603           |                 | Adequate                       | A          | Adequate  |
| GSFC → ERSDAC  | ASTER                      | 12450  | 12450  | ENPL-PTH → ERSDAC         | n/a                | 86762          | 86762          |                 | Excellent                      | E          | Excellent |
| ERSDAC → EDC   | ASTER                      | 26832  | 26832  | ERSDAC → EDC PTH          | n/a                | 85023          | 85023          |                 | Excellent                      | E          | Excellent |
| GSFC → KNMI  | OMI                        | 3282   | 3282   | GSFC-MAX → OMI-PDR        | n/a                | 22780          | 22780          |                 | Excellent                      | E          | Excellent |
| Notes: Flow Requirements include TRMM, Terra, Aqua, Aura, ICESAT, QuikScat |                            |  |        |                           | Ratings Summary    |                |                |                 |                                |            |           |
|  |                            |  |        |                           |                    |                |                | Feb-06          | Req                            | Oct-06     |           |
|  |                            |  |        |                           |                    |                |                | Score           | Prev                           | Score      |           |
| *Criteria:   | Excellent                  | Total Kbps > Requirement * 3                   |        |                           | Excellent          |                |                | 7               | 7                              | 7          |           |
|  | GOOD                       | 1.3 * Requirement <= Total Kbps < Requirement  |        |                           | GOOD               |                |                | 6               | 6                              | 5          |           |
|  | Adequate                   | Requirement < Total Kbps < Requirement * 1.3   |        |                           | Adequate           |                |                | 4               | 4                              | 4          |           |
|  | Almost Adequate            | Requirement / 1.3 < Total Kbps < Requirement   |        |                           | Almost Adequate    |                |                | 1               | 1                              | 2          |           |
|  | LOW                        | Requirement / 3 < Total Kbps < Requirement / 1 |        |                           | LOW                |                |                | 3               | 3                              | 3          |           |
|  | BAD                        | Total Kbps < Requirement / 3                   |        |                           | BAD                |                |                | 0               | 0                              | 0          |           |
|  |                            |  |        |                           | Total              |                |                | 21              | 21                             | 21         |           |
|  |                            |  |        |                           | GPA                |                |                | 2.79            | 2.79                           | 2.71       |           |

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (February and October, '06). Thus as the requirements increase, the same measured performance will be lower in comparison.



Interpretation: The bottom of each bar is the average measured MRTG flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the sum of the MRTG user flow plus the iperf measurement – it is this value which is used as the basis of the ratings

**1) ASF**Rating: **Excellent**Web Page: [http://ensight.eos.nasa.gov/Networks/emsnet/ASF\\_EMS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/ASF_EMS.shtml)

Test Results:

| Source → Dest    | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                  | Best                          | Median | Worst |           |       |            |
| GSFC-CSAFS → ASF | 1.39                          | 1.33   | 1.18  | 0.00      | 1.33  | 1.33       |
| ASF → NESDIS     | 1.40                          | 1.40   | 1.33  |           |       |            |
| ASF → LASP       | 1.36                          | 1.34   | 0.75  |           |       |            |
| ASF → GSFC-CSAFS | 1.40                          | 1.36   | 0.99  |           |       |            |
| ASF → JPL-SEAPAC | 1.36                          | 1.31   | 1.27  |           |       |            |

**Comments:** Thruput test results were stable this month to and from all destinations; the 1.3 to 1.4 mbps inbound and outbound totals are as expected for a single T1 (1.54 mbps) circuit. *Note that these ASF tests used EMSnet until Feb 14. Testing transitioned to IOnet in early March.*

Requirements:

| Source → Dest | Date   | kbps | Rating    |
|---------------|--------|------|-----------|
| ASF → LASP    | FY '06 | 16   | Excellent |

**2) EDC:**Rating: Continued **Low**Web Page: <http://ensight.eos.nasa.gov/Networks/emsnet/EDC.shtml>

Test Results:

| Source → Dest          | Medians of daily tests (mbps) |        |       | User Flow                    | TOTAL | Integrated |
|------------------------|-------------------------------|--------|-------|------------------------------|-------|------------|
|                        | Best                          | Median | Worst |                              |       |            |
| GSFC-DAAC → EDC LPDAAC | 212.7                         | 172.1  | 65.4  | 175.8                        | 347.9 | 189.8      |
| GSFC-PTH → EDC PTH     | 114.7                         | 39.5   | 18.7  |                              |       |            |
| ERSDAC → EDC           | 88.8                          | 85.0   | 21.0  | (via APAN / Abilene / vBNS+) |       |            |
| EDC DAAC → GSFC DAAC   | 129.0                         | 102.9  | 33.1  |                              |       |            |
| EDC DAAC → GSFC ECHO   | 84.7                          | 73.3   | 53.8  |                              |       |            |
| EDC PTH → GSFC PTH     | 236.1                         | 204.1  | 161.2 |                              |       |            |

Requirements:

| Source → Dest | Date   | mbps  | Rating    |
|---------------|--------|-------|-----------|
| GSFC → EDC    | FY '06 | 285.4 | Low       |
| ERSDAC → EDC  | FY '06 | 26.8  | Excellent |

**Comments:**

The problem from GSFC-PTH to EDC-PTH remains (apparently packet loss on or near vBNS+), so the rating is again based on testing between from GDAAC to EDC LPDAAC. The PTH hosts are outside the EDC firewalls, and therefore normally have higher thuput – but that is true this month only for EDC → GSFC flows.

The rating is based on the "Integrated" measurement, and as usual is lower than the sum of the User Flow + iperf. The user flow this month increased substantially, but had only a small contribution to the integrated measurement. This 190 mbps value is below 30% under the requirement, so the rating remains "Low". Hopefully when the PTH problem is fixed the rating will improve again.

The median thuput from ERSDAC to EDC-PTH (in support of the ERSDAC to EDC ASTER flow, replacing tapes) is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

**3) JPL:****3.1) JPL ↔ GSFC**

Ratings: GSFC → JPL: PIP: Continued **Low**  
 EMSnet: Continued **Good**  
 JPL → GSFC: Continued **Good**

Web Pages:

[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_SEAPAC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_SEAPAC.shtml)  
[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_PODAAC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_PODAAC.shtml)  
[http://ensight.eos.nasa.gov/Missions/aqua/JPL\\_AIRS.shtml](http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml)

Test Results:

| Source → Dest           | NET | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|-------------------------|-----|-------------------------------|--------|-------|-----------|-------|------------|
|                         |     | Best                          | Median | Worst |           |       |            |
| GSFC-CSAFS → JPL-SEAPAC | EMS | 6.3                           | 4.3    | 0.6   | 0.5       | 4.8   | 4.5        |
| GSFC-PTH → JPL-PODAAC   | EMS | 6.2                           | 5.1    | 3.9   |           |       |            |
| GSFC-DAAC → JPL-AIRS    | PIP | 16.9                          | 12.6   | 1.2   |           |       |            |
| GSFC-PTH → JPL-AIRS     | PIP | 14.3                          | 8.5    | 1.0   |           |       |            |
| GSFC-CNE → JPL-AIRS     | SIP | 19.8                          | 9.1    | 1.3   |           |       |            |
| GSFC-CNE → JPL-MISR     | SIP | 22.8                          | 20.2   | 13.7  |           |       |            |
| JPL-PODAAC → GSFC DAAC  | EMS | 12.3                          | 12.2   | 7.1   |           |       |            |

Requirements:

| Source → Dest         | Date    | Mbps | Rating |
|-----------------------|---------|------|--------|
| GSFC → JPL via EMSnet | Feb '06 | 3.1  | Good   |
| GSFC → JPL via PIP    | Feb '06 | 15.8 | Low    |
| JPL → GSFC combined   | Feb '06 | 7.4  | Good   |

**Comments:**

**GSFC → JPL:** Most GSFC-JPL flows moved from EMSnet to NISN PIP on 2 December (But some remained on EMSnet); the requirements are therefore correspondingly divided.

**EMSnet:** Typical performance on this circuit dropped in mid January from 8 mbps peaks to 6 mbps; The daily worst dropped due to congestion at GSFC-CSAFS. The rating remains "Good".

**PIP:** The PIP flows include QA data from GDAAC to JPL-AIRS, ISTs for several missions (but the JAXA AMSR-E ISTs flow to JPL via EMSnet), and science user flow estimates, totaling 15.76 mbps. **The throughput to AIRS via PIP is very noisy** – note the high ratio (10:1) of daily median to daily worst from GSFC-PTH. Performance was similar from the GDAAC node. It had been much more stable from GSFC CNE (via SIP, usually 18-20 mbps) until late October, when the throughput via SIP became as noisy as PIP. **This extreme noisiness causes the median to be well below the requirement, resulting in a continued "Low" rating.**

**Note:** performance was much steadier from the same sources at GSFC to JPL-MISR (median to worst ratio of only about 1.5:1) – via the same route (SIP) except for the last LAN hops. This suggests problems with congestion at the AIRS node.

**JPL → GSFC:** The MLS requirements increased last month (total was 3.18 mbps in December). Performance was stable; the rating remains "Good".

**3.2) JPL ↔ LaRC**

Ratings: LaRC → JPL: Continued **Adequate**  
 JPL → LaRC: Continued **Low**

Web Pages:

[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_TES.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_TES.shtml)

[http://ensight.eos.nasa.gov/Missions/terra/JPL\\_MISR.shtml](http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml)

Test Results:

| Source → Dest        | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|----------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                      | Best                          | Median | Worst |           |       |            |
| LaRC PTH → JPL-PTH   | 41.0                          | 41.0   | 30.8  | 2.2       | 43.2  | 41.0       |
| LaRC DAAC → JPL-TES  | 40.7                          | 38.2   | 13.4  |           |       |            |
| LaRC DAAC → JPL-MISR | 41.4                          | 37.2   | 11.3  |           |       |            |
| JPL-PTH → LaRC PTH   | 37.6                          | 37.6   | 36.9  |           |       |            |

Requirements:

| Source → Dest            | Date    | Mbps | Rating          |
|--------------------------|---------|------|-----------------|
| LaRC DAAC → JPL-TES      | Feb '06 | 29.8 | <b>Adequate</b> |
| LaRC DAAC → JPL-MISR     | Feb '06 | 18.5 | <b>Good</b>     |
| LaRC DAAC → JPL-Combined | Feb '06 | 39.6 | <b>Adequate</b> |
| JPL → LaRC               | Feb '06 | 52.6 | <b>Low</b>      |

**Comments:**

**LaRC → JPL:** Performance has been stable since this flow was switched to NISN PIP in Feb '05; MRTG data became unavailable at that time -- the passive "flows" data is now being used instead. The "integrated" thruput is slightly above the requirement; the rating remains "Adequate".

**JPL → LaRC:** This requirement was identified in version 1.4 of the EOS Networks Handbook, and is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. Testing of this capability was switched in December to use iperf from JPL-PTH to LARC PTH, now that these nodes are again on the same network (PIP). The measured thruput was stable this month. However, the nominal requirements increased in December (was 35.1 mbps previously) to support increased TES reprocessing. The rating remains "Low".

**3.3) ERSDAC → JPL ASTER IST**

Rating: n/a

Test Results:

| Source → Dest          | Medians of daily tests (mbps) |        |       |
|------------------------|-------------------------------|--------|-------|
|                        | Best                          | Median | Worst |
| ERSDAC → JPL-ASTER-IST | 85.5                          | 51.1   | 15.7  |

**Comments:**

**ERSDAC → JPL-ASTER-IST:** This test was initiated in March '05, via APAN replacing the EBnet circuit. The typical 76 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).

**4) NSIDC:**

Ratings: GSFC → NSIDC: Continued **Good**  
 NSIDC → GSFC: Continued **Adequate**

Web Pages: [http://ensight.eos.nasa.gov/Networks/emsnet/NSIDC\\_EMS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/NSIDC_EMS.shtml)  
[http://ensight.eos.nasa.gov/Missions/aqua/NSIDC\\_u.shtml](http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml)

**GSFC ↔ NSIDC Test Results:**

| Source → Dest          | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|------------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                        | Best                          | Median | Worst |           |       |            |
| GSFC-DAAC → NSIDC-DAAC | 90.5                          | 87.5   | 33.3  | 3.0       | 90.5  | 87.8       |
| GSFC-PTH → NSIDC-DAAC  | 91.3                          | 88.4   | 54.0  |           |       |            |
| NSIDC DAAC → GSFC-DAAC | 17.0                          | 16.8   | 12.2  |           |       |            |

**Requirements:**

| Source → Dest | Date    | Mbps | Rating          |
|---------------|---------|------|-----------------|
| GSFC → NSIDC  | Feb '06 | 63.9 | <b>Good</b>     |
| NSIDC → GSFC  | FY '06  | 13.3 | <b>Adequate</b> |

**Comments:**

**GSFC → NSIDC:** This rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thrupt values were stable this month. The requirement, however, varies from month to month, based on planned ICESAT reprocessing. This month the reprocessing **IS NOT** included. Since the thrupt is more than 30% above this reduced requirement, the rating remains "Good".

**NSIDC → GSFC:** Performance from NSIDC to GSFC was stable this month, and the median remains slightly less than 30% above the requirement, so the rating remains "Adequate".

**Other Testing:**

| Source → Dest              | Medians of daily tests (mbps) |        |       | Requirement | Rating           |
|----------------------------|-------------------------------|--------|-------|-------------|------------------|
|                            | Best                          | Median | Worst |             |                  |
| JPL → NSIDC-SIDADS         | 4.0                           | 3.5    | 1.7   | 1.34        | <b>Good</b>      |
| GSFC-ISIPS → NSIDC (iperf) | 89.7                          | 86.4   | 44.7  |             |                  |
| GSFC-ISIPS → NSIDC (ftp)   | 23.9                          | 23.8   | 15.5  |             |                  |
| NSIDC → GSFC-ISIPS (iperf) | 16.1                          | 15.7   | 14.6  |             |                  |
| NSSTC → NSIDC DAAC         | 12.7                          | 11.8   | 0.3   | 7.5         | <b>Good</b>      |
| ASF → LASP                 | 1.36                          | 1.34   | 0.75  | 0.024       | <b>Excellent</b> |
| GSFC CSAFS → LASP          | 6.4                           | 5.6    | 3.3   | 0.66        | <b>Excellent</b> |

**Comments:**

**JPL → NSIDC-SIDADS:** This flow switched from EMSnet to PIP in Feb '05, and thrupt dropped from 6.1 mbps previously. Thrupt remains below 3 x the requirement, so the rating remains "Good".

**GSFC-ISIPS ↔ NSIDC:** Performance from ISIPS to NSIDC was fixed in Feb '05, after having problems since July '04. Performance is at nominal levels for the circuit capacity. Testing from NSIDC to ISIPS is stable and gets thrupt similar to NSIDC to GDAAC.

**NSSTC (GHCC) → NSIDC:** NSSTC (Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. Median thrupt is more than 30 % over the requirement, so is rated "Good"

**LASP:** The requirements are now divided into ASF and GSFC sources: (Note: these tests were switched to IOnet in March).

**ASF → LASP:** Began testing from ASF to LASP node in October '05 – performance is limited by ASF T1 circuit, rating "Excellent", due to the modest requirement (Requirement increased this month—50% contingency added).

**GSFC → LASP:** Began testing from GSFC to LASP node in November '05 – thrupt is well above the requirement, rating "Excellent".



**5) GSFC ↔ LaRC:**

Ratings: LDAAC → GDAAC: Continued **Excellent**  
 GSFC → LARC: Continued **Adequate**

Web Pages: <http://ensight.eos.nasa.gov/Networks/emsnet/LARC.shtml>  
[http://ensight.eos.nasa.gov/Missions/sage/SAGE\\_MOC.shtml](http://ensight.eos.nasa.gov/Missions/sage/SAGE_MOC.shtml)

## Test Results:

| Source → Dest                    | Medians of daily tests (mbps) |        |       | User Flow | TOTAL | Integrated |
|----------------------------------|-------------------------------|--------|-------|-----------|-------|------------|
|                                  | Best                          | Median | Worst |           |       |            |
| GDAAC → LDAAC                    | 77.7                          | 62.9   | 14.5  | 4.5       | 67.5  | 63.8       |
| GSFC-NISN → LaTIS                | 79.0                          | 59.0   | 11.2  |           |       |            |
| GSFC-PTH → LaRC-PTH              | 78.5                          | 71.9   | 35.1  |           |       |            |
| GSFC-SAFS →<br>LaRC-SAGE III MOC | 5.4                           | 4.9    | 1.5   |           |       |            |
| LDAAC → GDAAC                    | 52.2                          | 49.9   | 16.8  | 0.009     | 49.9  | 49.9       |
| LDAAC → GSFC-ECHO                | 41.9                          | 33.5   | 19.9  |           |       |            |

## Requirements:

| Source → Dest                 | Date   | Mbps | Rating           |
|-------------------------------|--------|------|------------------|
| GSFC → LARC (Combined)        | FY '06 | 58.5 | <b>Adequate</b>  |
| GDAAC → LaRC ECS              | FY '06 | 17.8 | <b>Excellent</b> |
| GSFC-SAFS → LaRC-SAGE III MOC | FY '06 | 0.26 | <b>Excellent</b> |
| GSFC → LATIS                  | FY '06 | 40.7 | <b>Good</b>      |
| LDAAC → GDAAC                 | FY '06 | 3.2  | <b>Excellent</b> |

**Comments:**

**GSFC → LaRC:** The combined 58.5 mbps requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. So the rating is now based on the GDAAC to LaRC ECS DAAC thrupt, compared to the combined requirement. MRTG and LaTIS user flow data are also no longer available (but the ECS user flow data is used for the "User Flow" above).

So the GSFC→ LaRC ECS DAAC thrupt is now above the combined requirement, but by less than 30%, so the combined rating remains "Adequate".

GSFC-SAFS → LaRC-SAGE III MOC flows were moved to this section in December -- from the SCF report. Although the thrupt is much lower than the other GSFC-LaRC flows, it is more than 3 times the modest requirement, resulting in an "Excellent" rating

**LaRC → GSFC:** Performance from LDAAC → GDAAC remained stable with the switch to PIP in Feb '05. The thrupt remains more than 3 x the 3.2 mbps requirement (with the backhaul flows removed), so the rating continues as "Excellent".

The thrupt from LDAAC to GSFC-ECHO is similar to but a bit lower than LDAAC to GDAAC.

**6) NOAA NESDIS:**Rating: Continued **Excellent**Web Page: [http://ensight.eos.nasa.gov/Networks/emsnet/NOAA\\_NESDIS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/NOAA_NESDIS.shtml)

Test Results:

| Source → Dest    | Medians of daily tests (mbps) |        |       |
|------------------|-------------------------------|--------|-------|
|                  | Best                          | Median | Worst |
| GSFC-SAFS → NOAA | 7.07                          | 6.84   | 4.16  |
| JPL → NOAA       | 4.83                          | 4.77   | 4.42  |
| ASF → NOAA       | 1.40                          | 1.40   | 1.33  |
| JAXA → NOAA      | 1.85                          | 1.84   | 1.69  |

Requirements:

| Source → Dest       | FY  | Mbps | Rating           |
|---------------------|-----|------|------------------|
| GSFC-CSAFS → NESDIS | '06 | 0.19 | <b>Excellent</b> |

**Comments:** The NOAA EMSnet test host was replaced in October '05; all flows are now via the MAX connection. The dominant flow to NOAA is Quikscat data, from GSFC CSAFS. Thruput was stable from all sources, and much higher than the requirement, rating "Excellent". Thruput to this node from JAXA is consistent with circuit limitations. Testing from ASF was stopped on Feb 14 with the ASF switch to IOnet. There are no longer any ASF-> NOAA flow requirements.

**7) US ↔ JAXA:**

Ratings: JAXA → US: Continued **Adequate**  
 US → JAXA: Continued **Almost Adequate**

Web Pages [http://ensight.eos.nasa.gov/Networks/emsnet/JAXA\\_EOC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JAXA_EOC.shtml)  
[http://ensight.eos.nasa.gov/Networks/emsnet/JPL\\_SEAPAC.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/JPL_SEAPAC.shtml)  
[http://ensight.eos.nasa.gov/Networks/emsnet/GSFC\\_SAFS.shtml](http://ensight.eos.nasa.gov/Networks/emsnet/GSFC_SAFS.shtml)

Test Results:

| Source → Dest         | Medians of daily tests (mbps) |        |       |
|-----------------------|-------------------------------|--------|-------|
|                       | Best                          | Median | Worst |
| GSFC-CSAFS → JAXA-EOC | 1.56                          | 1.36   | 0.79  |
| JPL → JAXA-EOC        | 1.67                          | 1.37   | 0.49  |
| ASF → JAXA-EOC        | 1.26                          | 1.04   | 0.72  |
| JAXA-EOC → JPL-SEAPAC | 1.61                          | 1.60   | 0.74  |
| JAXA-EOC → GSFC-DAAC  | 1.50                          | 1.38   | 0.46  |

Requirements

| Source → Dest | Date         | mbps | Rating                 |
|---------------|--------------|------|------------------------|
| GSFC → JAXA   | FY '05, '06  | 1.43 | <b>Almost Adequate</b> |
| JAXA → US     | FY '04 - '06 | 1.28 | <b>Adequate</b>        |

**Comments:**

The JAXA circuit was moved to PIP on December 2 – performance reductions were observed. Also, MRTG data was no longer available.

**US → JAXA:** Performance from GSFC was stable this month – thrupt remains below but within 30% of the requirement, so the rating remains “Almost Adequate”.

Performance from JPL was similar, with slightly higher peaks..

From ASF the path was substantially lengthened – it went from ASF to JPL to GSFC via EMSnet, then back to JPL via PIP, then to the JAXA tail circuit. This increased the RTT from about 180 to 350 ms, and decreased the performance from 1.1 mbps in November. [Testing between JAXA and ASF was terminated on Feb 14, with the ASF switch to IOnet.](#)

**JAXA → US:** Performance remained consistent with the ATM PVC. The requirement was increased in Version 1.4 of the EOS Networks Handbook. This month testing from JAXA to JPL was stable; but without adding the MRTG, the thrupt was no longer 30% over the requirement, so the rating remains “Adequate”.

**Slnet Testing:**

It is planned to remove the NASA – JAXA dedicated circuit above, by September 2006. After that, all the above data will be transferred via Slnet or APAN. Accordingly, the following tests are run via Slnet:

| Source → Dest | Medians of daily tests (mbps) |        |       | Requirement | Rating           |
|---------------|-------------------------------|--------|-------|-------------|------------------|
|               | Best                          | Median | Worst |             |                  |
| GSFC → JAXA   | 10.0                          | 9.9    | 9.4   | 1.43        | <b>Excellent</b> |
| JAXA → GSFC   | 8.8                           | 8.7    | 7.2   | 1.28        | <b>Excellent</b> |

Thruput from GSFC to JAXA is considerably better via this path than the dedicated ATM circuit. Beginning July 1 '05, JAXA upgraded their infrastructure, and thrupt was 20-30 mbps from GSFC to JAXA, and 10 mbps from JAXA to GSFC. But on 13 September, thrupt abruptly dropped, accompanied by significant packet loss. This problem cleared up for JAXA to US in late November, improving the thrupt from a median of 1.1 mbps. It cleared up for US to JAXA flows in January (median was 2.2 mbps in December).

So this path is now clearly superior to the ATM circuit (also cheaper!).

**8) ERSDAC ↔ US:**Rating: Continued **Excellent**Web Page : <http://ensight.eos.nasa.gov/Networks/emsnet/ERSDAC.shtml>

## Test Results:

| Source → Dest                      | Medians of daily tests (mbps) |                     |                     |
|------------------------------------|-------------------------------|---------------------|---------------------|
|                                    | Best                          | Median              | Worst               |
| GDAAC → ERSDAC                     | 22.3                          | 17.0                | 7.7                 |
| GSFC ENPL (Fast Ethernet) → ERSDAC | 89.3                          | 86.8                | 25.7                |
| <a href="#">GSFC-EDOS → ERSDAC</a> | <a href="#">4.3</a>           | <a href="#">2.5</a> | <a href="#">1.4</a> |

## Requirements:

| Source → Dest | FY        | Mbps | Rating           |
|---------------|-----------|------|------------------|
| GSFC → ERSDAC | '03 - '06 | 12.5 | <b>Excellent</b> |

**Comments:** Dataflow from GSFC to ERSDAC was switched to APAN in February '05, and the performance above is via that route. MRTG and user flow data are no longer available due to this change.

The thrupt from GDAAC is apparently limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Abilene and APAN backbones are 10 Gbps), and thus exceeds capacity of the switch's FastE output circuit. But the FastE connected GSFC-ENPL node is limited to 100 mbps by its own interface, so does not suffer performance degrading packet loss – its performance is much higher. Note: The EDOS production system is also FastE connected, and gets the higher performance levels. [Testing from EDOS to ERSDAC began in February, but is also limited by the GigE problem. Testing will be switched to an EDOS FastE production node when possible.](#)

The requirement now includes the level 0 flows which used to be sent by tapes. The thrupt is still more than 3 x this increased requirement, so the rating remains "Excellent".

**Other Testing:**

| Source → Dest          | Medians of daily tests (mbps) |        |       |
|------------------------|-------------------------------|--------|-------|
|                        | Best                          | Median | Worst |
| ERSDAC → JPL-ASTER IST | 85.5                          | 51.1   | 15.7  |
| ERSDAC → EROS          | 88.8                          | 85.0   | 21.0  |

## Requirements:

| Source → Dest | Date   | mbps | Rating           |
|---------------|--------|------|------------------|
| ERSDAC → EROS | FY '06 | 26.8 | <b>Excellent</b> |

**Comments:**

**ERSDAC → EROS:** The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were stable this month. Thrupt improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thrupt is more than 3 x the requirement, so the rating remains "Excellent"

**ERSDAC → JPL-ASTER-IST:** This test was initiated in March '05, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered "Excellent" (no requirement is specified at this time – but other IST requirements are 311 kbps)

## 9) SIPS Sites:

Web Pages <http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml>  
<http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml>  
[http://ensight.eos.nasa.gov/Missions/aura/KNMI\\_OMIPDR.shtml](http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml)

Test Results:

| Source → Dest      | Medians of daily tests (mbps) |        |       | Requirement | Rating    |
|--------------------|-------------------------------|--------|-------|-------------|-----------|
|                    | Best                          | Median | Worst |             |           |
| LaRC → NCAR        | 23.5                          | 20.6   | 13.7  | 5.4         | Excellent |
| GSFC → NCAR        | 93.1                          | 93.1   | 93.0  | 5.1         | Excellent |
| JPL → RSS          | 5.6                           | 5.2    | 2.0   | 2.4         | Good      |
| GHCC → NSIDC       | 12.7                          | 11.8   | 0.3   | 7.5         | Good      |
| GSFC → KNMI-OMIPDR | 22.9                          | 22.8   | 22.4  | 3.3         | Excellent |

**Comments:** These sites were previously reported in the QA/SCF report. But have been moved to this report since as SIPS, they are part of the EOS data production process. Note that they are not connected by EMSnet.

**NCAR:** NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. Thruput from LaRC (via NISN to MAX to Abilene) is a bit above 3 x the requirement, so the rating remains “Excellent”. From GSFC the median thruput is extremely steady at well over 3 x the requirement, so that rating also remains “Excellent”.

**RSS:** RSS (Santa Rosa, CA) is a SIPS for AMSR-E, receiving data from JPL, and sending its results to GHCC (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. Thruput improved to the above values at that time – more that 30% above the requirement, the rating remains “Good”.

Note that with the present configuration (passive servers at both RSS and GHCC), the RSS to GHCC performance cannot be tested.

**GHCC (NSSTC) → NSIDC:** This flow represents Layer 2 and 3 AMSR-E products produced at GHCC, and sent to NSIDC for archiving. Median thruput is more than 30% over the requirement, rating “Good”.

**KNMI:** KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in NY with Surfnet's 10Gbps circuit to Amsterdam. Thruput to the OMIPDR backup server at KNMI is limited only by a Fast Ethernet connection at KNMI, and gets over 80 mbps steady! The results above are to the OMI PDR primary server, protected by a firewall, and are quite a bit lower. Thruput is still well above 3 x the requirement, rating “Excellent”.